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# ***Environmental Assessment***

## **Seco Creek Water Quality Demonstration Project**

**Bandera, Medina, and Uvalde Counties, Texas**

**Prepared By:  
U. S. Department of Agriculture  
Soil Conservation Service  
Temple, Texas**

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**United States  
Department of  
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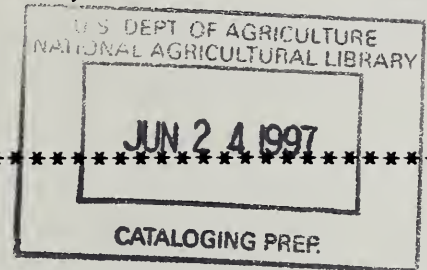


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ENVIRONMENTAL ASSESSMENT

SECO CREEK WATER QUALITY DEMONSTRATION PROJECT

Bandera, Medina, and Uvalde Counties, Texas



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Abstract

This project will demonstrate management of land and water resources to protect and enhance the quality and quantity of surface water that ultimately recharges the Edwards Aquifer, the sole source water supply for over 1.3 million people. The project will help landusers protect the sensitive, rapidly-recharged Edwards Aquifer and downstream reservoirs from potential contamination from pesticides, nutrients, and bacterial contaminants. The management practices will demonstrate how to maximize agricultural production, improve water quality, and protect land, water, air, plant, and animal resources.

The project has far reaching potential for improving the environment when the demonstrated practices are adopted for general use. The demonstrated practices will be applicable to similar lands throughout the 17 western states and will have similar beneficial effects on water quality and quantity.

The project will educate rural and urban water users of alternative land uses and treatment practices which will conserve habitats of threatened and endangered species. It will demonstrate cooperation between agricultural land users, conservationists, plant scientists, soil scientists, and biologists to enhance wildlife habitat and land and water resources.

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A COOPERATIVE PROJECT OF THE

SOIL CONSERVATION SERVICE, USDA

TEXAS AGRICULTURAL EXTENSION SERVICE, TEXAS A&M UNIVERSITY SYSTEM

TEXAS STATE SOIL AND WATER CONSERVATION BOARD

AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE, USDA

TOBIAS S. WILSON

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(Available from Soil Conservation Service 1616 Avenue M, Suite 100, Hondo, TX 78861)	





## SUMMARY

This Environmental Assessment concerns the implementation and operation of a project which will demonstrate best management practices to protect surface and ground water quality and quantity within and downstream of the Seco Creek watershed in South Central Texas. The project is needed because of a concern for water quality and quantity in the Edwards Aquifer which is the sole source water supply for 1.3 million people. Public awareness of the water quantity problem is shown almost daily in headlines of area newspapers which tell of declining spring flows and water levels in the aquifer.

The project will demonstrate practices which will protect against transport of pesticides, nutrients, and sediment into surface and ground water resources. It will demonstrate how to manage the ecosystem to improve the quality and quantity of water and vegetative cover. The demonstrated practices will also improve both agricultural land and wildlife habitat. The project will encourage adoption of best management practices (BMPs described on pages 23-26) that will protect against nonpoint source water pollution. The BMPs will improve off-site water quality and on-site water conservation. Well-head protection measures for controlling wastes from livestock feeding facilities, agricultural chemicals usage, and on-site sewage treatment systems will also be demonstrated.

Special emphasis of the project will be to demonstrate management practices that will stabilize agricultural production while protecting the environment. Landusers recognize the value of improving wildlife habitat in this area where land leasing for hunting and recreation is of equal or greater economic importance with agricultural uses of the land. The presence of endangered species in this area emphasizes the need for better land and vegetation management.

Land and water management practices designed to protect and recover habitats for endangered species will be demonstrated for adoption by land users. Cooperation of state and federal wildlife agencies and environmental groups will be requested to ensure continued protection of fish and wildlife habitats.



This demonstration project will involve BMPs that directly affect water quality and quantity and wildlife habitat. Practices on rangeland will include brush management, prescribed burning, proper grazing use, deferred grazing, fencing, and range seeding. Brush management practices will be designed to suppress infestations of brush species and reduce use of groundwater. Practices on cropland will include irrigation water management, nutrient management, pest management, and conservation tillage. Water and sediment control basins will be installed for the temporary storage of water for livestock and to recharge the aquifer. Wildlife upland habitat management will also be demonstrated.

Sites throughout the project area will be instrumented to measure the effects of applied practices. Weather stations and streamflow monitoring devices will be used to demonstrate water quality and quantity in the treated areas. Some areas will be instrumented as control areas to show the effects of no treatment.

Plots to be included in the project will be evaluated by qualified specialists before selection. Plots will not be selected if the evaluation shows the planned project activity may adversely affect any listed endangered species, archaeological resources, or other environmental concerns. Special care will be used to select sites and BMPs which will enhance the recovery of the endangered golden-cheeked warbler and black-capped vireo. Project leaders will be trained in identification of endangered species habitat. Procedures coordinated with the U.S. Fish and Wildlife Service will be followed in making the evaluations. Training and evaluations will be directed by certified biologists and environmental specialists. Decisions on selection of plots with questionable environmental values will be made after consultation with other concerned state or federal agencies.

The Soil Conservation Service (SCS), the Texas Agricultural Extension Service (TAEX), The Texas State Soil and Water Conservation Board (TSSWCB), and the Agricultural Stabilization and Conservation Service (ASCS) will cooperate as joint leaders in managing the project. A Memorandum of Agreement established the framework for United States Department of Agriculture (USDA) cooperative efforts with the Environmental Protection Agency (EPA) to support the project under





Section 319 of the Clean Water Act, as amended in 1987 and administered by EPA. Other Federal, State, and local governmental agencies will cooperate in the project by offering specialized assistance according to their interests and expertise. Other agencies cooperating in the project are:

- Agricultural Research Service (ARS)
- Texas Agricultural Experiment Station (TAES)
- U. S. Geological Survey (USGS)
- Edwards Underground Water District (EUWD)
- Texas Water Commission (TWC)
- Texas Water Development Board (TWDB)
- Texas Water Resources Institute (TWRI)
- Texas Department of Health (TDH)
- U. S. Fish and Wildlife Service (USFWS)
- Texas A & M University (TAMU)

### **Thrust of Project**

Specific objectives and goals for FY 1991 are shown in Appendix A. The major objectives of the project are:

1. Promote rapid and voluntary adoption of practices by landowners to improve water quality and quantity of aquifers, streams, ponds, and lakes in and downstream of the project area.
2. Develop and maintain a natural resource data base for the project.
3. Conduct educational activities.
4. Evaluate Seco Creek Water Quality Demonstration Project.

The project will demonstrate alternative management practices and agricultural production systems which (1) reduce the impacts of nonpoint source water pollution from agricultural chemicals, animal wastes, and sediment; (2) effectively suppress erosion and reduce sedimentation; (3) improve economic, social, and environmental

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resources; and (4) prove the agricultural community's willingness to address problems of water quality and quantity, and to respond to water resource issues.

The project will also demonstrate the best management practices to assure agricultural sustainability. It will provide economic data for analysis of production systems that improve water quality and it will expand the national data base to guide the selection and use of agricultural management systems.

Special emphasis of the project will be to educate landusers and other publics of alternative land uses and treatment practices which will conserve ecosystems of threatened and endangered species. This will be achieved through diligent consultation with USFWS.

The demonstrated land treatment will be publicized within Texas as well as other states and in the 17 western states that have similar water quality and quantity problems.

## **Alternatives**

The alternatives to this demonstration project are: (1) forego the project; or (2) pursue the plan to demonstrate best management practices to improve water quality and increase water quantity.

Alternative one would forego the opportunity to demonstrate and transfer technology that will protect the sensitive, rapidly-recharged Edwards Aquifer and surface streams and lakes. This alternative would eliminate an opportunity to demonstrate best management practices for adoption on over 1 billion acres of rangeland, related grazing land, and cropland of the United States.

Alternative two is the selected alternative. This alternative will demonstrate to urban and rural land and water users the methods to reduce transport of pesticides, nutrients, and sediment, improve groundwater and downstream surface water quality, and improve quality and availability of vegetative cover. The project will demonstrate and encourage adoption of best management practices that will reduce nonpoint source water pollution from rangeland, pastureland, and



cropland. These BMPs will achieve improved off-site water quality and on-site water conservation. Well-head protection measures and best management practices for controlling wastes from livestock feeding facilities, agricultural chemical usage, and on-site sewage treatment systems will also be demonstrated.





Loam, Claypan Prairie, Deep Upland, High Lime, Rolling Blackland, Deep Sand, Deep Sand Savannah, Sandy, Sandy Loam, Shallow Sandy Loam, and Tight Sandy Loam. A detailed description and type location of these range sites is in the SCS Field Office at Hondo, Texas.

SHALLOW GROUP- This group occurs on 61,810 acres. Cropland and pastureland occupy 610 acres or less than 1 percent of the area. Rangeland occupies 61,200 acres in this group. Range sites comprising the Shallow Group are Adobe, Gravelly Ridge, Low Stony Hill, Shallow, and Shallow Ridge.

STEEP GROUP- This group comprises 30,500 acres all of which is in rangeland. Range sites included in this group are Steep Adobe, Steep Rocky, and Rocky Hill.

BOTTOMLAND GROUP- This group consists of 9470 acres. Eighty five percent (8,030 acres) of this group is used for rangeland. Cropland and pastureland occupy the remaining 1,440 acres. The range site representing this group is Loamy Bottomland.

Rangeland in the project area is characterized by a large component of woody species. In fact, 78 percent of the project area is classified as brushy rangeland. Regrowth ashe juniper dominates the landscape. Live oak, Texas oak, and several other oak species are common throughout the region. Brush species such as whitebrush, mesquite, Texas persimmon, pricklypear, catclaw, and mescalbean have invaded much of the rangeland. The area is home to a wide variety of native forbs such as bushsunflower, engelmannndaisy, and orange zexmenia which are high quality food items for deer. Dominant native grasses which typify the area are little bluestem, sideoats grama, Indiangrass, big bluestem, vine mesquite, cane bluestem, Arizona cottontop, and plains bristlegrass.

An estimated 25 percent of the rangeland within the watershed is in good condition, 55 percent is in fair condition and 20 percent is in poor condition. Poor grazing management and the lack of fire have resulted in the invasion of less desirable grasses and brush species. These species use more water, create larger areas of bare soil conditions, and increase erosion hazards.





Major crops produced in the area are oats, forage sorghum, and corn. Pasture and hayland consists mostly of coastal bermudagrass and Kleingrass.

### **Fish and Wildlife Resources**

Notable examples of wildlife that inhabit the area are whitetailed deer, turkey, javelina, fox squirrel, bobwhite, scaled (blue) quail, dove, cottontail, jackrabbit, raccoons, foxes, ringtail cats, skunks, opossum, bobcats and coyotes. Mouflon sheep, axis deer, elk, blackbuck antelope, and Russian boar have been introduced into the watershed. Streams, ponds, and scattered grain fields attract ducks and geese during migration.

Natural wetlands in the project area are Upper Perennial and Intermittent Riverine systems mainly along Seco Creek. These areas were classified according to U.S. Fish and Wildlife Service's wetland inventory maps and SCS hydric soil data.

Ponded areas along the watercourses contain minnows, sunfish, bass, and channel catfish. Most farm and ranch ponds are stocked with channel catfish, black bass, and sunfish. These ponds, although scattered and small, offer fair to good fishing opportunities to the landowners.

Wildlife resources are of great economic importance to landowners and merchants in the area. Sportsmen and outdoor enthusiasts are drawn to this area because of the abundant wildlife and natural beauty of the landscape and biota. Most landuse decisions in this area are based on wildlife considerations and the potential of income from leasing land for recreational purposes.

### **Endangered Species**

As required by the Endangered Species Act of 1973, Section 7, the U.S. Fish and Wildlife Service's Ecological Services Office in Corpus Christi, Texas was asked to provide listed and proposed endangered and threatened species within the project area. Their response, dated



June 12, 1990, indicates that the following endangered species occur in Bandera, Medina, and Uvalde Counties:

1) Bandera County - black-capped vireo (Vireo atricapillus), golden-cheeked warbler (Dendroica chrysoparia), Texas snowbell (Styrax texana), and Tobusch fishhook cactus (Ancistrocactus tobuschii).

2) Medina County - black-capped vireo and golden-cheeked warbler.

3) Uvalde County - black-capped vireo, golden-cheeked warbler, Texas snowbell, and Tobusch fishhook cactus.

### Hydrologic Conditions

Hydrologic conditions depend on geologic features, soil characteristics, and vegetative cover. Conditions within the project area vary from bare ground or rock outcrop to abundant vegetation. Major factors affecting the amount of vegetative cover include: soil depth and texture, grazing management practices, brush management, brush competition, plant species and precipitation. Heavy grazing and sparse herbaceous vegetation is common within the watershed.

Research shows that rangeland water yields are increased by removing shrubs and trees that intercept and transpire large amounts of water and replacing them with grasses that require less water. Grasses and other herbaceous vegetation also reduce erosion and improve runoff water quality.

### Water Levels in the Edwards Aquifer

The great demand for water regularly depletes most of the available water in the aquifer, but the aquifer is refilled during years of normal rainfall. The Edwards Aquifer is at atmospheric pressure near the recharge zone but is under artesian pressure further downdip. The aquifer has had both record high levels (699 feet) and record low levels (613 feet) in recent years at the San Antonio Index Well (J17). So-called "trigger levels" established by the Edwards Underground

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Water District call for voluntary conservation to be in effect in San Antonio when the level reaches 625 feet at the Index Well with mandatory rationing at 612 feet. Comal Springs cease to flow when the level reaches 620 feet.

### **Groundwater Quality**

Most of the water stored in the Edwards Aquifer has a total dissolved solids (TDS) content of less than 500 mg/l. However, when the aquifer water table drops below 625 feet at the index well in San Antonio, there is a threat of intrusion of more saline water that lies in the lower depths of the Aquifer. This saline water exceeds the secondary drinking water standards for total dissolved solids, chloride and sulfate, with levels exceeding 3,000 mg/l, 3,000 mg/l, and 300 mg/l respectively. The higher salinity water is kept from polluting the upgradient body of the aquifer by the maintenance of a high water level of fresh water (less than 500 mg/l TDS) in the aquifer. Nitrates have not been identified as a problem in the western and southern sections of the Aquifer including the Seco Creek region.

### **Nature of Recharge to the Edwards Aquifer**

Slightly less than half the water that enters the Edwards Aquifer is pumped for municipal, industrial, and agricultural purposes. The Bexar County metropolitan area is the heaviest user of Edwards Aquifer water followed by irrigated farming in Uvalde County. Slightly more than half the water exits at Comal Springs and San Marcos Springs which supply most of the base flow of the Guadalupe River. This water is used primarily at and below the springs for recreation and municipal water supply.

About 70 percent of the recharge, or aquifer inflow, occurs in Uvalde and Medina Counties which contain the recharge zone of the Seco Creek watershed. Moreover, about 70 percent of the recharge occurs during wet weather conditions. The other 30 percent is recharged by normal day-to-day dry weather flow of the rivers and streams as they cross the limestone outcrop.





Primary recharge occurs where rivers and streams cross the recharge zone. Because of direct inflow characteristics of the recharge zone, the potential exists for significant biological or chemical pollutants to enter the aquifer.

Two stream gaging stations operated by the U. S. Geological Survey are located in the watershed:

- a. Station #08201500 -- above the Recharge Zone; average discharge is 6.13 acre inches per acre per year.
- b. Station #08202700 -- below the Recharge Zone; average discharge is 0.77 acre inches per acre per year.

These stream gages indicate most of the base stream flow in the Seco Creek enters the Edwards Aquifer rather than flowing downstream.

Most of the water that recharges the aquifer is storm runoff that carries sediment and possibly agricultural chemicals and organic matter. These agents could affect the potability of aquifer water. Water pumped from the aquifer, or discharged at one of the springs, has very low concentrations of silt or clay sediment. This indicates that most of the pollutants carried by inflowing water are deposited and remain in the aquifer. Exploration of sink holes in the area has shown the presence of significant sediment accumulation in the channel formations throughout the aquifer area.



## Cultural Resources

The project area has one listing in the National Register of Historic Places. The Old D'Hanis Historic District is an area of several blocks in D'Hanis. The area is comprised of 26 ruins and 17 structures dating from the mid to late 1800s and built primarily by Alsatian immigrants.

No historical or archaeological sites were identified within the proposed treatment areas. Site specific evaluations will be made on areas to be affected by project action.

## Socioeconomic Resources

The significance of the project area and project activities is highlighted by the close proximity of the metropolitan San Antonio area (Bexar County, Texas). This area has a population (1985) of 1,134,000. These people are dependent on the Edwards Aquifer for municipal and industrial water. San Antonio is the third largest city in Texas.

Most of the population of the Seco Creek project area is in Medina County. The population of Medina County was estimated to be 26,100 in 1986, a 12.7 percent increase from the 1980 census data. Hondo (nine miles east of the watershed) is the county seat and market center for Medina County. Hondo had an estimated population of 6,280 in 1986. The only community in the project area is D'Hanis, which had an estimated 1980 population of 506.

The ethnicity of D'Hanis is estimated to be 60 percent Hispanic and 40 percent Anglo American. The total project area less the population of D'Hanis is estimated to be 70 percent Anglo and 30 percent Hispanic.

The "Labor Force Estimates for Texas Counties, February 1989" documents a labor force of 11,602 for Medina County. Approximately 6.0 percent, or 701 workers, are unemployed. This is slightly below the state average of 7.3 percent. Unemployment rates for Bandera and Uvalde Counties are 3.7 and 9.6 percent, respectively.



The project area has no major water-based recreational features. Limited fishing is available in the ponded areas along the watercourse of the creek and in farm ponds. Quail, dove, and whitetail deer are usually abundant and provide considerable income for the landowner through hunting leases.

The route along Texas Highway 470 between Tarpley and Utopia has been designated as a part of the Texas Hill Country Trail, a recreational program of the Texas Department of Highways and Public Transportation. Approximately four miles of Texas Highway 470 crosses the project area at the extreme upper end in Bandera County.







## DESCRIPTION OF PLANNED ACTION

The Plan of Operations for FY 1991 (Appendix A) outlines proposed activities, scheduling, and responsibilities for the project during the first year of operation. As stated in the Plan of Operations, "...the primary emphasis will be directed at expanding efforts to identify and demonstrate appropriate management systems and best management practices (BMPs) for reducing nutrient and pesticide loading rates and increasing producer awareness of, and response to, potential sources of non-point source (NPS) pollution within the watershed". Similar plans of operations will be developed for the succeeding four years of the project implementation period.

Participation by landusers will be entirely voluntary. Landusers will agree to demonstration and monitoring activities needed to accomplish the objectives of the project. Objective 2, Goal 1, Action Item 3 of the Plan of Operations for FY 1991 specifies that the Project Leaders will work with USFWS to preserve endangered species habitat.

SCS planning activities for protecting and preserving cultural resources will be in accordance with the Programmatic Memorandum of Agreement with the Advisory Council on Historic Preservation. The procedures published in the SCS General Manual, title 420, Part 401, will be followed.

Demonstrations on rangeland will be directed at improving vegetative cover by replacing infestations of woody plant species with grasses and forbs and by proper management. Brush treatments to be demonstrated will show the effects of surface disturbance of shallow erosive soils as compared to selected chemical and mechanical treatments that do not disturb the surface. Results will provide ranchers with a direct comparison between rangeland treatments allowing them to make the best selection from alternatives. Results also will be used by personnel of several agencies to provide data for validation and calibration of existing hydrologic and nonpoint source models so that broad-based predictions and projections can be made for larger watersheds.



Water and sediment control basins will be installed at strategic locations to demonstrate and quantify the value of small impoundments for increasing recharge to the Aquifer. They will be designed to store water temporarily until recharge occurs. They will also be used by wildlife and livestock.

On cropland, alternative management practices including conservation tillage (which currently has low acceptance), water conservation practices for irrigated and non-irrigated land, nutrient management, and pest management will be demonstrated. The water quality effects of each practice will be evaluated.

Data and information from research projects and water quality monitoring programs of other agencies will be utilized to the extent possible. Demonstrations will supplement the current information and data pool to encourage adoption of recommended practices. Existing resource data (vegetative cover, soil types, livestock uses, wildlife population densities, water yield, water quality, etc.) will be digitized for data management and analysis with Geographic Information Systems (GIS). As information becomes available from demonstrations, it will be stored in the GIS program and used to display results of the project.

Small, medium, and large scale demonstrations will be established on rangeland to show the effectiveness of selected practices in terms of direct effects on water quality, sediment, and runoff volume. The small scale demonstrations will be performed on micro-watersheds 0.2 to 5 acres in size. Other demonstrations will be located on larger acreage sites.

Rangeland demonstration sites will be selected based on conditions that are representative of large areas of the watershed that are conducive to treatment and improved management. The water quality effects of grazing management systems and brush management will be major variables to be evaluated through demonstrations. Entire subwatersheds, with weather and flow monitoring and sampling equipment, will be used where possible. Some of the criteria that will be considered in selecting sites for demonstrations are soil types, land use, specific practices to be demonstrated, and aquatic and terrestrial wildlife habitat.





Grazing management treatments to be established will involve heavy grazing, proper grazing, and no grazing, using the existing mix of livestock species (primarily beef cattle, sheep, goats and horses). Brush management treatments will be established within grazing treatments. Wildlife will be excluded, where appropriate, from demonstration areas.

Brush management measures will include: axeing, prescribed burning, grubbing, chaining, chemical application, and no treatment (control). Herbicide treatments will include chemicals such as: picloram, triclopyr, 2,4-D, dicamba, clopyralid, hexazinone, and tebuthiuron.

On cropland sites, demonstrations will be applied on adjacent plots (micro-watersheds) and will emphasize fertilizer and pesticide levels, methods of application, and tillage methods (conservation tillage vs. conventional tillage) on small grains, sorghum, corn, cotton and vegetables. Most cropland in the project area occurs downstream from the recharge zone.

Cropland demonstrations will involve measurements of chemical movement, both nutrients and pesticides, percolating through the soil as well as that transported in runoff water. Soil testing will be used to quantify leaching losses. Flow monitoring and sampling will quantify runoff amounts and constituents. An integrated pest management program will be demonstrated on the cropland sites. Soil moisture will be monitored to improve irrigation scheduling (timing and amounts) and to clarify potential leaching losses. Weather stations will be installed along with the demonstration equipment and practices.

Locations of existing water wells within the project area will be obtained from official state records and local information sources. A field survey of 25 or more water wells will then be made to examine their physical condition and collect water samples for analysis. Recommendations will be made to the landowners concerning improvements in well design or wellhead protection measures that will reduce contamination potential. Incentives and practical methods that might be necessary for encouraging voluntary compliance will be explored with landowners. Technical and policy recommendations from this phase





of the study will be presented to the Ground Water Section of the Texas Water Commission.

Education programs for homeowners and local officials on site selection, soils evaluation, and design criteria for on-site sewage treatment are being conducted by the Texas Agricultural Extension Service in several counties with partial support of a USDA Farm and Home Administration grant to the Ohio State University Cooperative Extension Service. Together with technical involvement of SCS and Texas Department of Health personnel, these Extension programs will be provided to qualifying residents of the Seco Creek project area. Also, technical assistance will be made available to individuals with inadequate systems over the aquifer recharge zone.

Ongoing programs of education and technical assistance on livestock waste management by TAEX and SCS will be applied to the project area through establishment of demonstrations at small feeding operations and areas of livestock concentrations including those in the riparian zone of streams. Manure solids and nutrient balances will be calculated where applicable using the TAEX MANURE spreadsheet program to assure proper use on pasture or cropland. Demonstrations will be designed to show application of best management practices for the protection of both surface and ground water quality.

Likewise, best management practices for proper disposal of pesticide containers, livestock pharmaceutical packaging and household solid waste will be demonstrated.



## PUBLIC PARTICIPATION AND CONSULTATION ON ENVIRONMENTAL CONCERNS

The purpose of the project is to demonstrate methods to improve the quality and quantity of surface and ground water in and downstream of the project area. Agencies cooperating in the project are directly or indirectly involved with improving water quality of surface streams and lakes and underground aquifers. These agencies established an interagency planning team to guide development of the project. The team consisted of the following agencies:

- Soil Conservation Service (USDA)
- Texas Agricultural Extension Service
- Texas State Soil & Water Conservation Board
- Agricultural Stabilization and Conservation Service (USDA)
- Texas Agricultural Experiment Station
- Agricultural Research Service (USDA)
- U.S. Environmental Protection Agency (Region 6)

Numerous meetings were held in the project development stage to set goals and devise methods to improve water quality. The goals and methods agreed on by the cooperating agencies became the basis of the plan and will be implemented by the project. The agencies will comprise a board to consult and assist with project activities. Most of these agencies will be directly involved with one or more aspects of the project.

U. S. Fish and Wildlife Service was consulted on endangered species that may occur in the project area.

Public meetings, field demonstrations, and conferences have been held to inform the public of all aspects of the project. A newsletter is being published on a quarterly basis to provide information and results of project activities.

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The following agencies are requested to comment on this Environmental Assessment:

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Agricultural Stabilization and Conservation Service  
Agricultural Research Service  
Texas Agricultural Experiment Station  
U. S. Geological Survey  
Edwards Underground Water District  
Texas Water Commission  
Texas Water Development Board  
Texas Water Resources Institute  
Texas Department of Health  
U. S. Environmental Protection Agency  
U. S. Fish and Wildlife Service  
Texas Parks and Wildlife Department  
Texas State Historic Preservation Officer  
Medina County Commissioners Court  
Springhill Water Management District  
Medina County Underground Water Conservation Board  
Alamo Soil and Water Conservation District  
Bandera Soil and Water Conservation District  
Medina Valley Soil and Water Conservation District  
Nueces, Frio, Sabinal Soil and Water Conservation District

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The Effect of the Diet on the Blood Sugar in Diabetes Mellitus  
The Effect of the Diet on the Blood Sugar in Diabetes Mellitus

Service, 1616 Avenue M, Suite 100, Hondo, TX 78861. The demonstrations will be monitored with gauges and laboratory analyses and widely publicized to inform the public and other agencies of the findings. Demonstration plots will be located on private land volunteered by landowners. The plots will be located over the critical area of recharge as well as downslope from the recharge zone. Most cropland demonstration plots will be south of the recharge zone and will be of importance to surface water quality in and below the project area. Because the plots will be located on volunteered land, their location will not be known until the project is implemented.

Comment:

"On page 24, the use of subwatershed devices to sample for water quality and quantity is discussed. We recommend that this type of device be used on all the demonstrations and projects so that a quantifiable determination of water quality can be made prior to the water entering into the sole source aquifer. We believe this sampling should be done to be able to evaluate the changes in water quality and quantity accomplished by the project."

Response:

Actions of this project, including monitoring devices, are Federally funded with spending constraints which define the extent of the project. Monitoring will be an important part of this demonstration project to the extent that funds and resources are available.

Comment:

"On the bottom of page 25, the EA makes a general reference to wellhead protection measures. Where public water supply wells are concerned in the project area, we encourage the SCS to contact the Texas Water Commission Wellhead Protection Coordinator so that wellhead protection measures can be implemented as appropriate."

Response:

The project will involve close cooperation with the Texas Water Commission as well as many other agencies in locating water supply wells and recommending appropriate protection measures.

1. The first part of the paper discusses the importance of the study of the history of the English language. It is argued that the study of the history of the English language is not only a matter of academic interest but also of practical importance. The study of the history of the English language can help us to understand the development of the English language and to see how it has changed over time. It can also help us to understand the relationship between the English language and other languages.

2. The second part of the paper discusses the importance of the study of the history of the English language. It is argued that the study of the history of the English language is not only a matter of academic interest but also of practical importance. The study of the history of the English language can help us to understand the development of the English language and to see how it has changed over time. It can also help us to understand the relationship between the English language and other languages.

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4. The fourth part of the paper discusses the importance of the study of the history of the English language. It is argued that the study of the history of the English language is not only a matter of academic interest but also of practical importance. The study of the history of the English language can help us to understand the development of the English language and to see how it has changed over time. It can also help us to understand the relationship between the English language and other languages.

5. The fifth part of the paper discusses the importance of the study of the history of the English language. It is argued that the study of the history of the English language is not only a matter of academic interest but also of practical importance. The study of the history of the English language can help us to understand the development of the English language and to see how it has changed over time. It can also help us to understand the relationship between the English language and other languages.



USDA Agricultural Research Service:

Comment:

"The management practices that are being evaluated should serve to improve the quality of the environment and should have no negative impacts."

Response:

Noted.

Comment:

The principal agencies involved in the project are to be commended for a valuable, well-planned project."

Response:

Noted.

Edwards Underground Water District:

Comment:

"The District has a special interest in this project because we operate and maintain two artificial recharge dams in the Seco Creek Watershed. Additionally, the District cooperates with the USGS, conducting stream gauging and water quality sampling throughout the study area."

Response:

Noted.

Comment:

A primary concern of the District is the lack of any regulations relative to chemical use on the Edwards Aquifer Recharge Zone. The Texas Water Commission is the rule making and enforcement authority for the "Edwards Rules", which regulates activities over the recharge zone. Numerous attempts by the District to strengthen the rules have failed to incorporate any reference of chemical applications in this sensitive zone.



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The recharge zone is the most susceptible area for contamination of the Edwards Aquifer. The principal land use over the recharge zone is rangeland. Even though we do not approve of demonstration projects over the recharge zone involving chemical applications, and understand that this is not being done, we do encourage these demonstration projects in other areas. Herbicide application techniques for brush control on the Senesa Ranch and other plots may provide information that would demonstrate the best chemical application technique necessary to reduce the potential of adversely affecting groundwater quality."

Response:

The concern mentioned in the District's comment about chemical applications is a major reason for this demonstration project. The project will demonstrate alternatives to chemical use in brush management. It will advocate the use of herbicides only when it is the most effective and most economical method of brush management. The project will demonstrate judicious use of chemicals. When used, the proper methods of applying approved chemical pesticides in accordance with accepted standards and label directions will be demonstrated.

Comment:

"I suggest that chemical movement being leached through the soil as well as that transported in runoff water be monitored not only on cropland but on demonstration plots for brush and weed control on pastureland and rangeland."

Response:

Cropland demonstrations will involve measurement of chemical movement, both nutrients and pesticides, downward through the soils as well as that transported in runoff. Flow nonitoring and sampling equipment will be employed to quantify runoff amounts and constituents from demonstration plots on cropland and rangeland. A concerted public information program will distribute results of the testing and monitoring studies.

The first part of the paper discusses the importance of the study and the objectives of the research. It also mentions the scope of the study and the limitations. The second part of the paper discusses the methodology used in the study. It mentions the data sources and the statistical methods used. The third part of the paper discusses the results of the study. It mentions the findings and the conclusions. The fourth part of the paper discusses the implications of the study. It mentions the policy implications and the future research. The fifth part of the paper discusses the conclusion. It mentions the main findings and the overall conclusion.

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Comment:

"Another area of interest which is referenced in the Environmental Assessment is the use of demonstrated practices to effectively correct improperly constructed or abandoned water wells. The District cannot emphasize enough the importance of actively pursuing this endeavor. Abandoned wells allow for direct paths to our water supply and the widespread distribution of these wells present a significant threat to water quality. The District has initiated an aggressive effort in addressing abandoned wells in the Edwards Aquifer area, successfully coordinating the plugging of approximately 80 wells over the past 2 years. We support and encourage your efforts in this area."

Response:

Location of wells within the watershed will be determined from official state records and local information sources. Recommendations will be made to the landowners concerning improvements in well design or wellhead protection measures that will reduce contamination potential. Generic technical and policy recommendations from this phase of the study will be presented to the Ground Water Section of the Texas Water Commission.

Comment:

"The District looks forward to following the progress of the Seco Creek Water Quality Demonstration Project and the information it generates."

Response:

Noted.

Texas Parks and Wildlife Department:

Comment:

"The establishment of a project to demonstrate appropriate land management practices to landusers for the purpose of protecting and enhancing water quality and quantity is critical to the future of the Edwards Aquifer."





Response:

Noted.

Comment:

"Several potential issues are associated with the management practices proposed if wildlife habitat protection and enhancement is a major purpose."

Response:

Wildlife habitat protection and enhancement is a major concern recognized by landusers and project administrators. It is also recognized that land use without consideration of wildlife habitat would result in destruction of an important natural resource. The purpose of the project is to demonstrate best management practices to improve and maintain water quality in the aquifer and surface waters in and below the watershed. A major concern is to implement these practices and include due consideration for wildlife habitat.

Comment:

"The definition of what constitutes noxious brush is not clearly stated although there is an implication that the undesirability is associated with the production of rangeland grasses and loss of soil moisture."

Response:

The term "noxious" has been removed from the text to avoid misunderstanding. The less desirable grasses and brush species are the invader species that use more water, create larger areas of bare soil conditions and increase erosion hazards. Demonstrated practices that result in a reduction of brush will be implemented in conjunction with upland wildlife habitat management practices to assure a minimum of adverse impacts on wildlife habitat.

Comment:

"Ashe juniper or cedar is a major problem in the area. Control of this species would improve the rangeland for wildlife and livestock as

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial data. This section also covers the proper use of accounting software and the need for regular backups to prevent data loss.

The second part of the document provides a detailed overview of the company's current financial status. It includes a summary of the income statement, balance sheet, and cash flow statement. The analysis shows that the company has achieved a steady increase in revenue over the past year, while maintaining a healthy profit margin. The cash flow remains positive, indicating that the company is well-positioned to meet its short-term obligations.

The third part of the document outlines the company's financial goals for the upcoming year. It sets targets for revenue growth, profit margins, and cash flow. The plan includes strategies for expanding the customer base, improving operational efficiency, and managing risks. The document concludes with a statement of confidence in the company's ability to achieve these goals and a commitment to transparency in all financial reporting.

The fourth part of the document provides a detailed breakdown of the company's expenses. It categorizes costs into fixed and variable expenses, allowing for a more granular analysis of the company's cost structure. The document highlights areas where costs can be reduced without compromising the quality of products or services. It also discusses the impact of inflation on the company's expenses and provides strategies for mitigating this risk.

The fifth part of the document discusses the company's capital structure and its plans for raising additional funds. It evaluates the current level of debt and equity financing, and assesses the company's creditworthiness. The document outlines the terms of any existing loans and the company's plans for refinancing or issuing new debt. It also discusses the company's plans for issuing new equity, including the potential benefits and risks of each option.

The sixth part of the document provides a summary of the company's financial performance and a outlook for the future. It reiterates the company's commitment to transparency and accuracy in its financial reporting. The document concludes with a statement of confidence in the company's ability to achieve its financial goals and a commitment to the long-term success of the organization.

well as improve ground water flow. However, other woody species occurring within the project area would be potentially impacted. Many of these plants serve as food and cover for many wildlife species including the economically important white-tailed deer."

Response:

It is recognized that brush management practices will impact some desirable brush species. However, the thrust of the project is to demonstrate best management practices for improvement and enhancement of water quality and quantity. These practices will be applied in planned operations with consideration for the protection and improvement of plant species, brush density, and brush canopy for wildlife habitat. The economic importance of the white-tailed deer and other species is a strong incentive to the acceptance of brush management practices by landowners who cooperate in this voluntary program.

Comment:

"Possible effects of brush clearing on threatened, endangered, or sensitive species must also be considered."

Response:

As stated in the assessment, a wildlife biologist will evaluate plots for endangered species habitat before the plots are selected for use in the project. The plots will not be selected if endangered species habitat is found. This procedure was developed in cooperation with representatives of the US Fish and Wildlife Service. Decisions on selection of plots with questionable environmental values will be made after consultation with other concerned agencies. Strict adherence to this policy will assure the project will not adversely effect or jeopardize the continued existence of any endangered species.

Comment:

"Widespread use of chemical herbicides to control brush is not practiced by this Department on its own land nor is it recommended to landusers due to nonselectivity relative to other beneficial plants, and overall undesirability in comparison to low soil impact forms of mechanical treatment or prescribed fire. .... Notwithstanding any





positive or negative biological effects, use of chemical pesticides is becoming more unpopular with the general public and will require increased accountability by resource agencies."

Response:

The thrust of the project is to demonstrate best management practices to manage brush and enhance and improve water quality and quantity in and below the watershed. Methods of applying approved chemical pesticides in accordance with accepted standards and label directions will be demonstrated by the project. Consideration will be given to location of demonstrations in regard to proximity of the aquifer recharge zone and surface water resources.

Comment:

"The description of planned actions mentions the installation of water and sediment control basins to demonstrate the value of small impoundments for increasing aquifer recharge. However, details concerning the number of impoundments, size or site descriptions or site impacts were not included."

Response:

Installation of water and sediment control basins will be planned during the project implementation phase as the need and acceptance of landowners indicates. These installations will be small farm pond-sized basins designed to store water temporarily until recharge occurs. They will also be used by wildlife and livestock.

Comment:

"For cropland areas alternative management practices including conservation tillage, water conservation, nutrient management, and pest management are planned for demonstration but a description of the procedural process for such demonstrations was not included."

Response"

Inclusion of job sheets and detailed descriptions of the best management practices to be demonstrated was not included in the assessment. This information is readily available from the Texas



THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY  
1100 SOUTH EAST ASIAN AVENUE  
CHICAGO, ILLINOIS 60607

TO: [Name]  
[Address]  
[City]  
[State]  
[Zip]

FROM: [Name]  
[Address]  
[City]  
[State]  
[Zip]

SUBJECT: [Subject]

RE: [Reference]

DATE: [Date]

TIME: [Time]

BY: [Signature]

FOR: [Signature]

NOTE: [Note]

REMARKS: [Remarks]

Agricultural Extension Service or from the Soil Conservation Service's field office.

Comment:

"Department staff is available to provide assistance in the continued development of this plan to integrate wildlife resource needs with enhancement of water quality and quantity."

Response:

The joint leaders of this project, i.e. the USDA Soil Conservation Service, Texas Agricultural Extension Service, Texas A&M University System, Texas State Soil and Water Conservation Board, and USDA Agricultural Stabilization and Conservation Service appreciate the assistance offered by the Texas Parks and Wildlife Department.

Texas Water Commission:

Comment:

"The protection of the water quality of the Edwards Aquifer, while improving agricultural production and wildlife habitat, is extremely important; especially in a region where all of these resources are critical to the economy."

Response:

Noted.

Comment:

"Throughout the text of the report, the reference to actually improving the quality of the Edwards Aquifer is mentioned. This may be a difficult objective to meet, since the water quality in the aquifer has not been significantly degraded. Perhaps a more realistic objective should be to improve the quality of the surface water that ultimately recharges the aquifer and to mitigate any future contamination or preserve the existing high quality of the Edwards Aquifer."

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CHICAGO, ILLINOIS

Response:

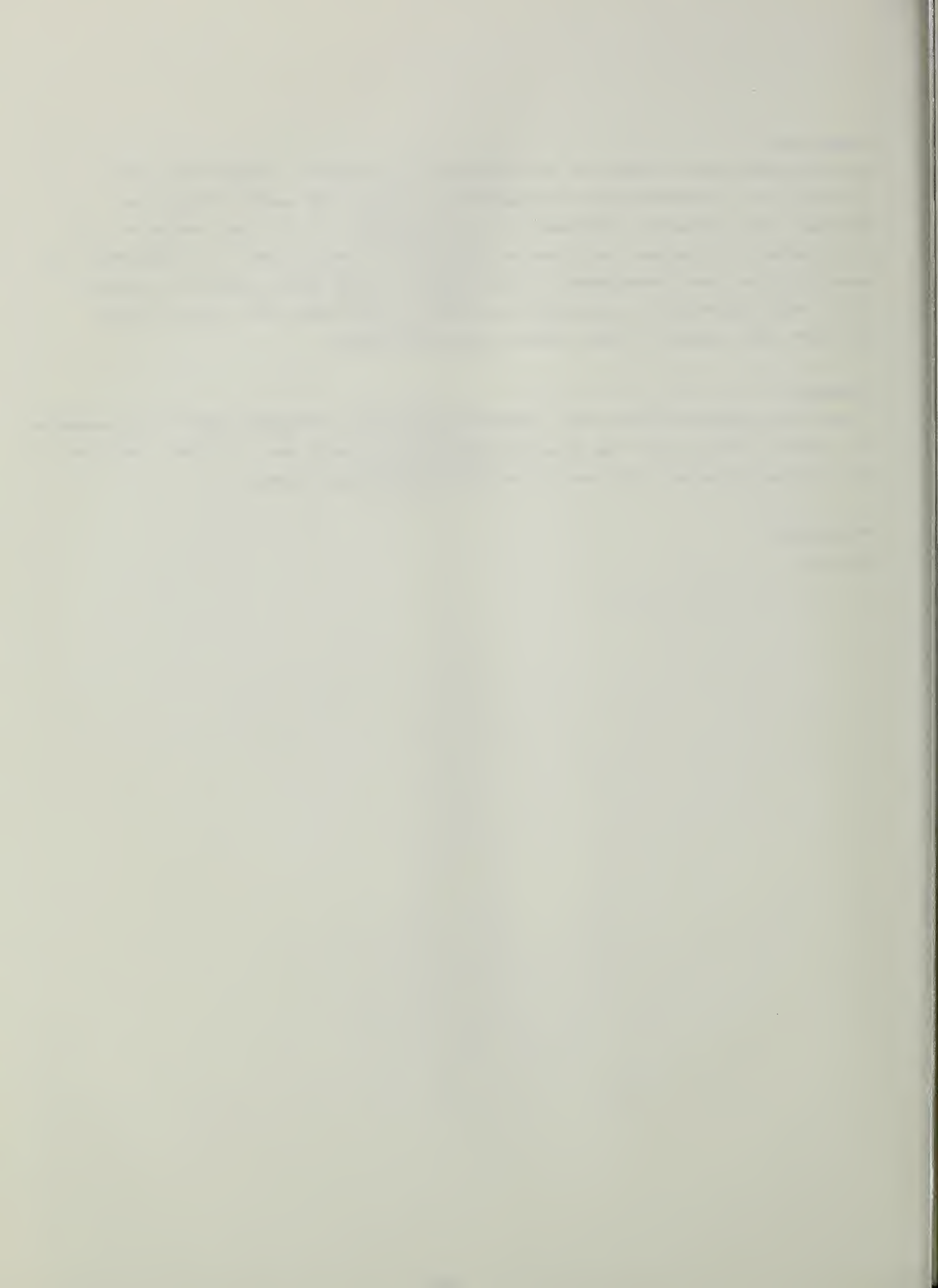
Wording has been added in the document to clearly state that the project will demonstrate management of land and water resources to protect and enhance the quantity and quality of surface waters that ultimately recharge the Edwards Aquifer. The project is designed to demonstrate best management practices of land and vegetation which will help maintain high quality water in the aquifer and surface streams and lakes in and below the watershed.

Comment:

"The DEA appears to be well designed and the results should be useable to other areas over the Edwards Aquifer as well as in other regions in the United States with karst-aquifer recharge zones."

Response:

Noted.





## LIST OF PREPARERS

### U.S.D.A. Soil Conservation Service

<u>NAME AND TITLE</u>	<u>EDUCATION</u>	<u>EXPERIENCE</u>
Dan M. Caudle, Planning Staff Leader	B.S. Range Management	23 Years
James Henson, Environmental Specialist/ Wildlife Biologist	B.S. Wildlife Science	32 Years
Max D. Bircket, Geologist	B.S. Geology	23 Years
J. David Kelley, Soil Conservationist	B.S. Agronomy	33 Years
Richard Reznik, GIS Specialist	B.S. Ag. Engineering	19 Years

### Other Agencies With Significant Input:

U.S. Fish and Wildlife Service

MEMORANDUM FOR THE RECORD

DATE: 10/10/50

TO: THE SECRETARY OF THE ARMY

FROM: THE CHIEF OF STAFF

SUBJECT: [Illegible]

1. [Illegible]

2. [Illegible]

3. [Illegible]

4. [Illegible]

5. [Illegible]

6. [Illegible]

7. [Illegible]

8. [Illegible]

## REFERENCE MATERIAL

Edwards Underground Water District, A descriptive Brochure of the Edwards Underground Water District, 1989.

Groundwater Quality of Texas--An Overview of Natural and Man-Affected Conditions, Report 89-001, Texas Water Commission, Austin, Texas, 1987

San Antonio Regional Water Resource Study, Sponsored by The City of San Antonio and the Edwards Underground Water District.

Texas State Brush Control Plan, Draft, Texas State Soil and Water Conservation Board, Temple, Texas, 1986.

The Edwards Aquifer Extremely Productive, But....., by Charles R. Burchett, Paul L. Rettman, and Charles W. Boning, U.S. Geological Survey In cooperation with the Edwards Underground Water District, 1986.

Water, Water Conservation and The Edwards Aquifer, produced at Southwest Texas State University under an interagency agreement between the Edwards Underground Water District and the Edwards Aquifer Research and Data Center.

# MEMORANDUM

TO : THE PRESIDENT  
FROM : THE SECRETARY OF DEFENSE  
SUBJECT: [Illegible]

1. [Illegible]

2. [Illegible]

3. [Illegible]

4. [Illegible]

5. [Illegible]

6. [Illegible]

7. [Illegible]

APPENDIX A

LETTERS OF COMMENT RECEIVED ON DRAFT ENVIRONMENTAL ASSESSMENT







UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6

1445 ROSS AVENUE, SUITE 1100

DALLAS, TEXAS 75201

June 14, 1991

WOP 4-5

Mr. Harry W. Oneth  
State Conservationist  
SCS, 101 South Main  
Temple, Texas 76501-7682

Dear Mr. Oneth:

In complying with Section 309 of the Clean Air Act, we have completed our review of your agency's Draft Environmental Assessment (EA) for the Seco Creek Water Quality Demonstration Project in Bandera, Medina, and Uvalde Counties, Texas. Since the project is located within the Edwards Aquifer, a Federally designated sole source aquifer in Texas, all Federally financially assisted projects with potential to impact the underlying ground water regime are subject to review by the Environmental Protection Agency (EPA) pursuant to Section 1424(e) of the Safe Drinking Water Act. The Region 6 Office of Ground Water has memorandums of understanding with the Soil Conservation Service (SCS), as well as four other Federal agencies for the referral of Federally financially assisted projects to EPA for evaluating their potential to contaminate the Edwards aquifer.

We offer the following comments for your consideration:

1. On page 3, and at many other places the EA refers to best management practices (BMP) and agricultural production systems that will reduce water pollution, erosion and sedimentation, but does not refer to where in the EA these BMPs are listed. A page reference should be given early in the EA.
2. The BMPs, agricultural production systems and wellhead protection measures should be explained in more detail concerning protecting and enhancing water quality. The EA should explain how these protective actions will be different on small, medium and large scale demonstrations referred to on page 24, and for differing weather, soil, plant and aquifer conditions. It should also explain how these actions could change during the rainy season compared to during the winter and summer months. Additionally, the EA should explain how these actions could be expected to change on the sides of hills compared to in the valleys and in different soils. Finally, it should be pointed out how these actions would be more critical to the final quality of the water near and at the Edwards Recharge Zone, and less critical (but still important) at the northern edge of the project.
3. On page 24, the use of subwatershed devices to sample for water quality and quantity is discussed. We recommend that this type of device be used on all the demonstrations and projects so that a quantifiable determination of water quality can be made prior to the water entering into the sole source aquifer. We believe this sampling should be done to be able to evaluate the changes in water quality and quantity accomplished by the project.

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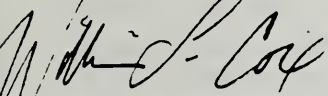
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4. On the bottom of page 25, the EA makes a general reference to wellhead protection measures. Where public water supply wells are concerned in the project area, we encourage the SCS to contact the Texas Water Commission Wellhead Protection Coordinator so that wellhead protection measures can be implemented as appropriate. The Wellhead Protection Coordinator for Texas is Mr. Brad L. Cross, Geologist, Ground Water Section, Texas Water Commission (512) 371-6321.

Thank you for the opportunity to comment.

Sincerely yours,



Norm Thomas  
Chief

Federal Activities Branch (6E-F)

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United States  
Department of  
Agriculture

Agricultural  
Research  
Service

Southern Plains Area  
Grassland, Soil and Water  
Research Laboratory

808 East Blackland Road  
Temple, Texas  
76502-9601

(817) 770-6500

May 17, 1991

WQP 4-5

Mr. Harry W. Oneth  
State Conservationist  
USDA, SCS  
101 South Main Street  
Temple, TX 76501-7682

Dear Wes:

Thank you for the opportunity to comment on the Environmental Assessment for Seco Creek Water Quality Demonstration Project. The purpose of the project is to demonstrate methods to improve the quality and quantity of surface and ground water in the project area. The management practices that are being evaluated should serve to improve the quality of the environment and should have no negative impacts.

The principal agencies involved in the project are to be commended for a valuable, well-planned project.

Sincerely,

*Clarence W. Richardson*

CLARENCE W. RICHARDSON  
Laboratory Director

0-34



EDWARDS UNDERGROUND  
WATER DISTRICT

5.1-1.5

May 14, 1991

Harry W. Oneth  
State Conservationist  
Soil Conservation Service  
101 South Main  
Temple, Texas 76501-7682

Mr. Oneth:

The Edwards Underground Water District (District) appreciates the opportunity to comment on the Draft Environmental Assessment for the Seco Creek Water Quality Demonstration Project. The District has a special interest in this project because we operate and maintain two artificial recharge dams in the Seco Creek Watershed. Additionally, the District cooperates with the USGS, conducting stream gauging and water quality sampling throughout the study area.

A primary concern of the District is the lack of any regulations relative to chemical use on the Edwards Aquifer Recharge Zone. The Texas Water Commission is the rule making and enforcement authority for the "Edwards Rules", which regulates activities over the recharge zone. Numerous attempts by the District to strengthen the rules have failed to incorporate any reference of chemical applications in this sensitive area.

The recharge zone is the most susceptible area for contamination of the Edwards Aquifer. The principal land use over the recharge zone is rangeland. Even though we do not approve of demonstration projects over the recharge zone involving chemical applications, and understand that this is not being done, we do encourage these demonstration projects in other areas. Herbicide application techniques for brush control on the Senesa Ranch and other plots may provide information that would demonstrate the best chemical application technique necessary to reduce the potential of









TEXAS  
PARKS AND WILDLIFE DEPARTMENT  
4200 Smith School Road • Austin, Texas 78744 • 512-389-4800

ANDREW SANSOM  
Executive Director

COMMISSIONERS

CHUCK NASH  
Chairman, San Marcos

JOHN WILSON KELSEY  
Vice-Chairman  
Houston

June 12, 1991

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Brownsville

TERESE TARLTON HERSHEY  
Houston

GEORGE C. "TIM" HIXON  
San Antonio

BEATRICE CARR PICKENS  
Dallas

WALTER UMPHREY  
Beaumont

Mr. Harry W. Oneth  
State Conservationist  
Soil Conservation Service  
U.S. Department of Agriculture  
101 South Main Street  
Temple, Texas 76501-7682

Re: Draft Environmental Assessment--Seco Creek Water  
Quality Demonstration Project

Dear Mr. Oneth:

The above referenced document has been reviewed by Department staff and the following comments are provided.

The establishment of a project to demonstrate appropriate land management practices to landusers for the purpose of protecting and enhancing water quality and quantity is critical to the future of the Edwards Aquifer. As stated in the document summary, the purpose of the project is to focus on "best management practices to protect surface and ground water quality and quantity and wildlife habitat within and downstream of the Seco Creek watershed in South Central Texas".

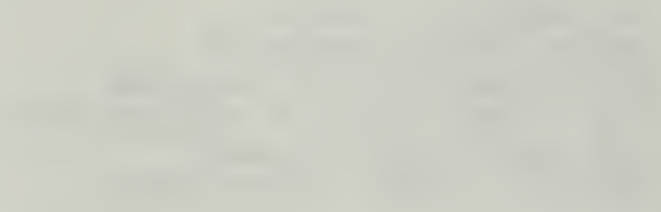
Several potential issues are associated with the management practices proposed if wildlife habitat protection and enhancement is a major purpose. These include: 1) the definition of "noxious brush" and the effects of brush control on wildlife; 2) use of chemical herbicides; and 3) increasing rangeland productivity for agricultural purposes without sacrificing the quality or quantity of wildlife habitat.

The definition of what constitutes noxious brush is not clearly stated although there is an implication that the undesirability is associated with the production of rangeland grasses and loss of soil moisture. Within the northern one half portion of the Seco Creek project area, the predominant vegetation type is a combination of Live oak- Ashe juniper Woods and Live oak-Ashe juniper Parks (Savannah). Ashe juniper or cedar is a major problem in





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the area. Control of this species would improve the rangeland for wildlife and livestock as well as improve ground water flow. However, other woody species occurring within the project area would be potentially impacted. Many of these plants serve as food and cover for many wildlife species including the economically important white-tailed deer. Such plants include Spanish oak, shin oak, Lacey oak, escarpment cherry, cedar elm, netleaf sumac, kidney wood, skunkbush sumac, evergreen sumac, flameleaf sumac, elbowbush, madrone, redbud, chittam, sweet mountain grape, greenbriar, Texas persimmon, possum haw holly, lantana, and various species of condalia and acacia. In attempting to control the cedar, any extensive attendant brush removal of these species would be very detrimental to wildlife on both a short term and long term basis.

Within the southern portion of the project area there is a vegetation type consisting of mesquite, live oak, and bluewood condalia associated with granjeno, blackbrush, huisache, persimmon, chittam, whitebrush and several other brush species typically occurring in south Texas. Removal of mature mesquite and associated brush species that are high in nutrient value to wildlife would not be consistent with promoting high quality habitat.

Possible effects of brush clearing on threatened, endangered, or sensitive species must also be considered. A listing of such species with records of occurrence is provided in Attachment 1.

If not carefully planned juniper control will very likely impact the golden-cheeked warbler. Although Texas persimmon was listed as a noxious species, it is potentially a desirable component of black-capped vireo habitat.

Widespread use of chemical herbicides to control brush is not practiced by this Department on its own lands nor is it recommended to landusers due to nonselectivity relative to other beneficial plants, and overall undesirability in comparison to low soil impact forms of mechanical treatment or prescribed fire. Herbicides and their associated byproducts would constitute a potential source of contamination to exposed ponds and stream tributaries and ultimately to the recharge zone. Application of this method of treatment would not seem consistent with the overall goal of maintaining high





Page 3  
water quality and may not justify increased water intake to the aquifer through control of vegetation if a risk of water contamination is created. Notwithstanding any positive or negative biological effects, use of chemical pesticides is becoming more unpopular with the general public and will require increased accountability by resource agencies.

The description of planned actions mentions the installation of water and sediment control basins to demonstrate the value of small impoundments for increasing aquifer recharge. However, details concerning the number of impoundments, size or site descriptions or site impacts were not included.

For cropland areas alternative management practices including conservation tillage, water conservation, nutrient management, and pest management are planned for demonstration but a description of the procedural process for such demonstrations was not included.

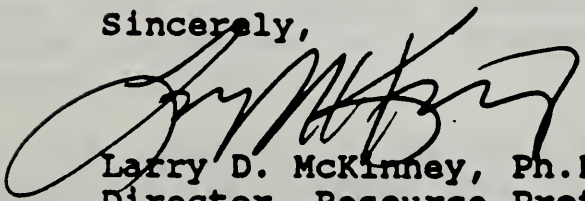
In regard to the Plan of Operations for FY 1991, action items such as alternative herbicide application techniques, weed control BMPs, irrigation management and nutrient management lacked description concerning what would be implemented, extent of application, or ranges of treatment.

In summary, the Seco Creek Water Quality Demonstration Project is a major study with significant implications concerning specific management practices and resultant effects to water recharge and wildlife habitat. However, some aspects of the study proposal should be more clearly delineated in regard to site descriptions for specific management practices, scale of treatments and description of treatments. While protection of wildlife habitat is listed as a major goal, potential conflicts could occur in regard to ultimate implementation of the project.

Department staff is available to provide assistance in the continued development of this plan to integrate wildlife resource needs with enhancement of water quality and quantity.

I appreciate your coordination on this project.

Sincerely,



Larry D. McKinney, Ph.D.  
Director, Resource Protection Division

LDMcK:RGF:wja

cc. Texas Water Commission, Austin  
U.S. Fish and Wildlife Service, Fort Worth





# TEXAS WATER COMMISSION



B. J. Wynne, III, Chairman  
John E. Birdwell, Commissioner  
Cliff Johnson, Commissioner

John J. Vay, General Counsel  
Michael E. Field, Chief Hearings Examiner  
Gloria A. Vasquez, Chief Clerk

Allen Beinke, Executive Director

June 11, 1991

Mr. Harry W. Oneth  
State Conservationist  
U.S. Department of Agriculture  
Soil Conservation Service  
101 South Main Street  
Temple, Texas 76501-7682

Re: Draft Environmental Assessment (DEA) for the Seco Creek Water Quality Demonstration Project (Bandera, Medina, and Uvalde Counties, Texas)

Dear Mr. Oneth:

The staff of the Texas Water Commission (TWC) has reviewed the referenced DEA regarding the proposed demonstration project to develop watershed management practices which will protect surface and groundwater against transport of pesticides, nutrients, and sediment.

The protection of the water quality of the Edwards Aquifer, while improving agricultural production and wildlife habitat, is extremely important; especially in a region where all of these resources are critical to the economy.

Throughout the text of the report, the reference to actually improving the quality of the Edwards Aquifer is mentioned. This may be a difficult objective to meet, since the water quality in the aquifer has not been significantly degraded. Perhaps a more realistic objective should be to improve the quality of the surface water that ultimately recharges the aquifer and to mitigate any future contamination or preserve the existing high quality of the Edwards Aquifer.

The DEA appears to be well designed and the results should be useable to other areas over the Edwards Aquifer as well as in other regions in the United States with karst-aquifer recharge zones.

# MEMORANDUM FOR THE RECORD

1

TO: Mr. [Name]

FROM: Mr. [Name]

SUBJECT: [Subject]

DATE: [Date]

1. [Text]

2. [Text]

3. [Text]

4. [Text]

5. [Text]

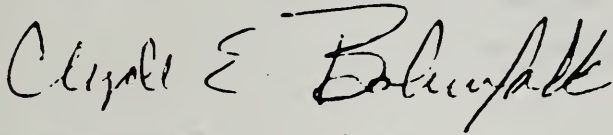
6. [Text]

7. [Text]

Mr. Harry W. Oneth  
June 11, 1991  
Page 2

We support the DEA and have no objections to the project as proposed. Thank you for the opportunity to provide comments. If you have any questions regarding this matter, please contact Mr. Dick Respass of my staff at (512) 463-8412.

Sincerely,

A handwritten signature in dark ink, reading "Clyde E. Bohmfalk". The signature is written in a cursive style with a large, stylized "C" and "B".

Clyde Bohmfalk, Director  
Water Quality Division

cc: TWC District 8



APPENDIX B

SECO CREEK WATER QUALITY DEMONSTRATION PROJECT  
Plan of Operations for FY 1991





## **TEXAS**

### **Seco Creek Water Quality Demonstration Project**

#### **Plan of Operations for FY 1991**

The attached Plan of Operations has been developed for the period October 1, 1990 through September 30, 1991, to outline proposed activities, scheduling and agency responsibilities for the Seco Creek Water Quality Demonstration Project. Primary emphasis will be directed at expanding efforts to identify and demonstrate appropriate management systems and BMPs for reducing nutrient and pesticide loading rates and increasing producer awareness of, and response to, potential sources of NPS pollution within the watershed.

Cooperative efforts among the lead agencies will ensure timely development and installation of project activities. In addition, project activities will be coordinated with other federal and state agencies and organizations involved in water quality including the U.S. Geological Survey, Texas Water Commission, Texas Water Development Board, Texas Agricultural Experiment Station, and Environmental Protection Agency.

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO

The University of Chicago is a private research university in Chicago, Illinois. It was founded in 1837 as the first American university to be organized on the European model, with a focus on research and scholarship. The university has a long history of academic excellence and has produced many notable alumni and faculty members. It is known for its commitment to intellectual freedom and its diverse student body.

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**Texas**

**Seco Creek Water Quality Demonstration Project**

**Plan of Operations for FY 1991**

**Objective 1. Promote Rapid and Voluntary Adoption of Practices by Landowners to Improve Water Quality and Quantity of Aquifers, Streams and Lakes in the Seco Creek Project Area.**

**Goal 1. Reduce nutrient and pesticide loading rates in Seco Creek Project Area.**

Action Items:	Responsibility	Start/Complete
1. Work with district conservationists, county extension agents, SWCD directors, and ASCS County Committee to identify and establish demonstration sites	TAEX/SCS TSSWCB/ASCS	10/90 - 9/91
2. Work with agencies to install and evaluate the following demonstrations:	TAEX/SCS ASCS/TSSWCB	10/90 - 9/91
a. Alternative herbicide application techniques for mixed brush on Seneca Ranch	TAEX/SCS	9/90 - 9/91
b. Effectiveness and movement of herbicide applied for brush control on Seneca Ranch	TAEX/SCS	10/90 - 9/91
c. Weed control BMPs on pastureland and rangeland.	TAEX/SCS	11/90 - 9/91
d. Irrigation and nutrient management on Petty Ranch	TAEX/SCS	10/90 - 10/91
e. Filter strips and field borders to reduce agricultural chemical movement	SCS/TAEX	1/91 - 10/91





f. Furrow diking to reduce field runoff of nutrients and pesticides	TAEX/SCS	1/91 - 10/91
g. Soil testing to improve nutrient application efficiency	TAEX/SCS	9/90 - 10/91
h. Soil moisture monitoring to improve irrigation efficiency and reduce nutrient leaching and runoff	SCS/TAEX	9/90 - 10/91
i. Integrated crop management for reduced nutrient and pesticide loadings	TAEX/SCS	1/91 - 10/91
j. Pesticide container disposal (Mixing and handling procedures)	TAEX/SCS	1/91 - 2/91
k. Proper agri-chemical equipment calibration	TAEX/SCS	1/91 - 2/91

**Goal 2 Improve/Maintain Water Quality and Quantity in Seco Creek Project Area.**

1. Work with district conservationists, county extension agents, SWCD directors, and ASCS County Committee to identify and establish demonstration sites	TAEX/SCS TSSWCB/ASCS	10/90 - 9/91
2. Work with agencies to install and evaluate the following demonstrations:		
a. Spring enhancement to show effects of brush management on spring flow quality and quantity on Seco Ranch and Texas Mountain Ranch	SCS/TAEX	10/90 - 9/91
b. Management techniques for improvement of water quality in riparian areas on Valdina Farms	SCS/TAEX	10/90 - 9/91



c. Brush management affects on water use of regrowth Ash Juniper on Hillis Ranch	SCS/TAEX TAES	9/90 - 10/91
d. Range and wildlife habitat management benefits for improved water quality	SCS/TAEX	11/90 - 10/91
e. Collect water quality and quantity information on Saco Creek and demonstration sites	USGS/TAEX SCS/TSSWCB	10/90 - 9/91
f. Innovative technology for livestock exclusion from critical areas	TAEX/ARS SCS	2/91 - 10/91

Objective 2. Develop and Maintain a Natural Resource Data Base for the Saco Creek Project.

Goal 1. Develop a Natural Resource Database for the Project Area.

Action Items:	Responsibility	Start/Complete
1. Develop a natural resource database on all currently selected demonstration sites	SCS/TAEX	10/90 - 1/91
2. Conduct site evaluations for biological, historical, and archeological information on each proposed new demonstration site	SCS/TAEX	10/90 - 9/91
3. Work with USF&W and TP&W to preserve endangered species habitat	SCS/TAEX USF&W/TP&W	10/90 - 9/91
4. Work with USGS, TWC, and TWDB to develop and catalog all existing water quality and quantity data available on the project area	SCS/TAEX USGS/TWC TWDB/TSSWCB	10/90 - 3/91



**Objective 3. Conduct Educational Activities for Watershed Clientele.**

**Goal 1. Enhance the Visibility, Effectiveness and Public Awareness of Seco Creek Water Quality Demonstration Project.**

Action Items:	Responsibility	Start/Complete
1. Develop series of videos addressing BMPs	TAEX/SCS	10/90 - 9/91
2. Develop posters displaying cooperators and installed BMPs	TAEX/SCS	10/90 - 9/91
3. Conduct meetings to keep local coordinating committee involved in all project activities.	SCS/TAEX	10/90 - 9/91
4. Develop and distribute quarterly newsletter to all clientele and agency participants	TAEX/SCS	10/90 - 9/91
5. Develop news articles for local, state and national newspapers and periodicals	TAEX/SCS	10/90 - 9/91
6. Develop fact sheets and bulletins for local and statewide distribution	TAEX/SCS	10/90 - 9/91
7. Field Day and Evaluation of treatments	TAEX/SCS ASCS/TSSWCB	9/91 - 9/91

**Objective 4. Evaluate Seco Creek Water Quality Demonstration Project.**

**Goal 1. Provide Project Evaluation Groups with Necessary Assistance.**

Action Items:	Responsibility	Start/Complete
1. Provide Nebraska Project Evaluation Team with necessary assistance for conducting evaluation of Seco Creek Project	TAEX/SCS ASCS/TSSWCB	8/90 - 9/90





2. Provide Wisconsin  
Producer Evaluation  
Team with necessary  
assistance for  
conducting evaluation

TAEX/SCS  
ASCS/TSSWCB

10/90 - 5/91

Goal 2. Conduct Economic and Resource Evaluation of BMPs Installed in Project Area.

1. Work with research  
agencies to obtain  
appropriate computer  
models for assessing  
demonstrations and for  
general project  
evaluation

TAEX/SCS

10/90 - 2/91

2. Assist National USDA  
group conducting  
economic and resource  
evaluation

TAEX/SCS

10/90 - 9/91

3. Conduct Seco Creek  
Project economic and  
resource evaluation

TAEX/SCS  
ASCS/TSSWCB  
ARS

10/90 - 9/91



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